

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|---|---|
| Applicant's or agent's file reference SMC 60542 WO | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT GB 03 05473 | International filing date (day/month/year) 16/12/2003 | (Earliest) Priority Date (day/month/year) 17/12/2002 |
| Applicant: AVECIA LIMITED | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/03/05473

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07F9/26 C07F9/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; TAWARA, SHINICHIRO ET AL: "Phosphorodiamidous acid ester derivatives" XP002272471 retrieved from STN Database accession no. 109:149797 abstract & JP 62 212395 A2 (NIPPON ZEON CO., LTD., JAPAN) 18 September 1987 (1987-09-18) ----- -/-- | 1-15 |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

9 March 2004

Date of mailing of the international search report

23/03/2004

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Authorized officer

Beslier, L

INTERNATIONAL SEARCH REPORT

International Application No

PCT/83/05473

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | HAMAMOTO S. ET AL.: "New approach to the synthesis of deoxyribonucleoside phosphoramidite derivatives" CHEMISTRY LETTERS., no. 8, 1986, pages 1401-1404, XP002272465 JP-CHEMICAL SOCIETY OF JAPAN. TOKYO. the whole document ----- | 1-15 |
| X | KRUCZYNSKI L.J. ET AL.: "Phenylfluorophosphoranes: axial-equatorial fluorine exchange in RC6H4PF3H and intermolecular exchange in the PhPF2(H)OMe-MeOH-base system" CANADIAN JOURNAL OF CHEMISTRY., vol. 68, no. 3, 1990, pages 488-491, XP002272466 CANADIAN RESEARCH COUNCIL. OTTAWA. the whole document ----- | 1-15 |
| X | HEINICKE J. ET AL.: "Synthese von o-Halogenphenoxy-, o-Halogenphenylthio- und o-Halogen-methylanilinoderivaten der IVb- und Vb-Elemente" JOURNAL FÜR PRAKTISCHE CHEMIE., vol. 325, no. 3, 1983, pages 511-516, XP0008028030 DEWILEY VCH, WEINHEIM. page 511, process (A) and page 514, table 1, first example ----- | 1-15 |
| X | NIFANT'EV E.E. ET AL.: "New aspects of the chemistry of pyrrolides of tervalent phosphorus acids" RUSSIAN JOURNAL OF GENERAL CHEMISTRY., vol. 62, no. 7, 20 December 1992 (1992-12-20), pages 1201-1208, XP002272467 USCONSULTANTS BUREAU. Synthesis of compound XIX ----- | 1-15 |
| X | KIBARDIN A.M. ET AL.: "Synthesis of ethyl bis(N-butyl-N-isobutenylamido)phosphite and reaction with alpha-chloroacetaldehydes" BULLETIN OF THE ACADEMY OF SCIENCES OF THE USSR. DIVISION OF CHEMICAL SCIENCE., vol. 31, no. 3, 20 September 1982 (1982-09-20), pages 625-627, XP002272468 USCONSULTANTS BUREAU. NEW YORK. preparation of compound (II) ----- -/-- | 1-15 |

INTERNATIONAL SEARCH REPORT

International Application No

PCT/ 3/05473

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | BURGADA R.: "Les réactions du carbonyle avec les aminophosphines X. Effet de substituant dans les réactions d'échange." BULLETIN DE LA SOCIETE CHIMIQUE DE FRANCE., no. 1, 1971, pages 136-143, XP002272469 FRSOCIETE FRANCAISE DE CHIMIE. PARIS. page 140, experimental part ----- | 1-15 |
| X | MITSUNOBU O. ET AL.: "Preparation of carboxylic esters and phosphoric esters by the activation of alcohols" BULLETIN OF THE CHEMICAL SOCIETY OF JAPAN., vol. 44, no. 12, 1971, pages 3427-3430, XP002272470 JPJAPAN PUBLICATIONS TRADING CO. TOKYO. page 3430, left-hand column, last paragraph ----- | 1-15 |
| X | WILK A ET AL: "The 4-oxopentyl group as a labile phosphate/thiophosphate protecting group for synthetic oligodeoxyribonucleotides" TETRAHEDRON LETTERS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 42, no. 33, 13 August 2001 (2001-08-13), pages 5635-5639, XP004295829 ISSN: 0040-4039 scheme 1 ----- | 1-15 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP93/05473

| Patent document cited in search report | | Publication date | | Patent family member(s) | Publication date |
|---|----|---------------------|----|----------------------------|---------------------|
| JP 62212395 | A2 | 18-09-1987 | JP | 62212395 A | 18-09-1987 |